**Small Business Innovation Research/Small Business Tech Transfer**

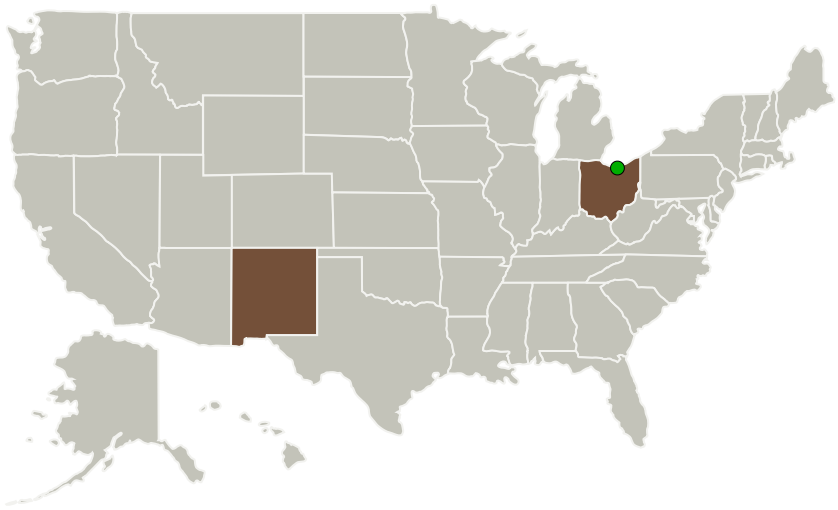
# Measurement of Trace Gases in the Atmosphere of Venus, Phase I

Completed Technology Project (2014 - 2014)

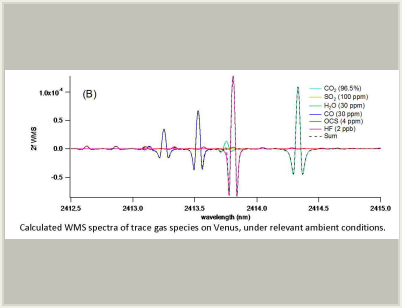
## Project Introduction

Southwest Sciences proposes to develop small, lightweight, low power instrumentation for the in situ balloon-borne measurement of several trace gases of importance in the atmosphere of Venus. Using low power vertical cavity diode lasers (VCSELs) at carefully selected wavelengths in the 2400 nm region, the instrument will be capable of simultaneous measurements of carbon monoxide, water vapor, hydrogen fluoride, carbonyl sulfide, and possibly sulfur dioxide. The Phase I effort will concentrate on identifying the best wavelength regions for measurement of multiple trace species with a minimum number of lasers (ideally no more than two), while establishing important design parameters for development of more rugged prototype instrumentation in Phase II.

## Primary U.S. Work Locations and Key Partners



| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| Southwest Sciences, Inc. | Lead Organization | Industry | Santa Fe, New Mexico |
| Glenn Research Center(GRC) | Supporting Organization | NASA Center | Cleveland, Ohio |




Measurement of Trace Gases in the Atmosphere of Venus Project Image

## Table of Contents

# Measurement of Trace Gases in the Atmosphere of Venus, Phase I

Completed Technology Project (2014 - 2014)

| Primary U.S. Work Locations | |
|---|---|
| New Mexico | Ohio |

## Project Transitions

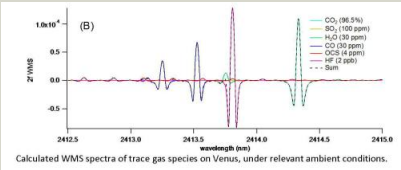
**June 2014:** Project Start

**December 2014:** Closed out

**Closeout Documentation:**

- Final Summary Chart*(https://techport.nasa.gov/file/137771)*

## Images




**Project Image**
Measurement of Trace Gases in the Atmosphere of Venus Project Image
*(https://techport.nasa.gov/image/131747)*

## Organizational Responsibility

**Responsible Mission Directorate:**
Space Technology Mission Directorate (STMD)

**Lead Organization:**
Southwest Sciences, Inc.

**Responsible Program:**
Small Business Innovation Research/Small Business Tech Transfer

## Project Management

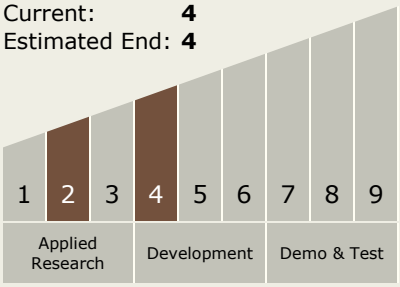
**Program Director:**
Jason L Kessler

**Program Manager:**
Carlos Torrez

**Principal Investigator:**
Alan C Stanton

## Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



# Measurement of Trace Gases in the Atmosphere of Venus, Phase I

Completed Technology Project (2014 - 2014)

## Technology Areas

**Primary:**

- TX08 Sensors and Instruments
  - TX08.3 In-Situ Instruments and Sensors
    - TX08.3.4 Environment Sensors

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System